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light emitting element including a substrate. Light radiates from a light emission surface of the substrate of the light emitting element. The light emission surface being provided on the substrate opposite to an electrode forming surface of the substrate. The apparatus also includes a transparent structure mounted on the light emission surface of the substrate. The transparent structure is optically connected with the light emission surface and has a light distribution characteristic based on a three-dimensional shape of the transparent structure.

Some conventional light emitting devices suffer from varying thicknesses of a phosphor coating that blocks the radiation of light, electrodes formed on a surface of the light emitting device that blocks the radiation of light, and wire bonding blocking the radiation of light.

The remaining conventional light emitting devices suffer from a complicated manufacturing process because of bump forming and the requisite need for high precision positioning, which requires the use of an expensive flip-chip bonding machine.

In stark contrast, an exemplary embodiment of the present invention provides a transparent structure that is mounted on the light emission surface of the substrate of a semiconductor light emitting element. In this manner, the light emitting apparatus may be easily connected to a lead frame, the manufacturing process may be simplified by obviating the need for bump forming, the light distribution density is lowered and, as a result a light distribution may be improved and the light blocking affects of a phosphor coating and/or wire bonds may be reduced. (Page 10, lines 10 – 29).

II. THE PRIOR ART REJECTIONS

A. The Caracci et al. reference in view of the Slater Jr. et al. reference

Regarding the rejection of claims 1-5, 7, 10-13, and 16-17, the Examiner alleges that

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the Slater Jr. et al. reference would have been combined with the Caracci et al. reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

None of the applied references teaches or suggests the features of the claimed invention including a transparent structure mounted on the light emission surface of the substrate. As explained above, this feature is important for simplifying the manufacturing process while simultaneously improving the light distribution density and reducing the light that is blocked from the semiconductor light emitting element.

The Examiner alleges that the Caracci et al. reference discloses "A transparent structure 12 mounted on the light emission surface the (sic) LED 26" and refers to paragraph [0030] and Figure 1.

However, contrary to the Examiner's allegation the mounting structure 12 of the Caracci et al. reference is not mounted on any light emission surface at all.

The Caracci et al. reference discloses a mounting structure 12 which includes a hole 22 (i.e. an optical source alignment feature) which receives an optical signal source 26. Figure 1 of the Caracci et al. reference very clearly illustrates that the surface of the optical signal source 26 from which light is emitted does not contact anything at all, let alone have anything mounted on the surface.

The Caracci et al. reference very clearly explains that the light that is emitted from the light emitting surface of the optical signal source enters the mounting structure 12 at the input collimating element 24. The collimating element 24 clearly is very clearly not mounted on the light emitting surface of the optical signal source 26.

Indeed, to the contrary, the Caracci et al. reference discloses that the mounting

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structure 12 is only mounted on a base portion of the optical signal source 26.

Moreover, none of the various embodiments of the mounting structure that are illustrated in Figures 1 – 13 of the Caracci et al. reference illustrate that the mounting structure is mounted on the light emission surface of the substrate of a semiconductor light emitting element.

To the contrary, all of the embodiments that are disclosed by the Caracci et al. reference illustrate that nothing is mounted on any of the light emission surfaces of the substrates of any semiconductor light emitting element.

Clearly, the Caracci et al. reference does not teach or suggest the features of the claimed invention including a transparent structure mounted directly on the light emission surface of the substrate.

The Slater Jr. et al. reference does not remedy the deficiencies of the Caracci et al. reference.

Indeed, the Examiner does not allege that the Slater Jr. et al. reference teaches or suggests a transparent structure mounted on the light emission surface of the substrate.

Moreover, Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different matters and problems.

In particular, the Caracci et al. reference is concerned with providing low-cost integrated transceiver components for local area network and fiber to home applications. ([0008]).

In stark contrast, the Slater Jr., et al. reference is concerned with the completely different and unrelated problem of providing an improved light extraction technique for light emitting diodes. (Col. 3, lines 33-39).

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One of ordinary skill in the art at the time the invention was made who was concerned with providing low-cost integrated transceiver components for local area network and fiber to home applications as the Caracci et al. reference is concerned, would not have referred to the Slater Jr. et al. reference, and vice-versa, because the Slater Jr. et al. reference is concerned with the completely different and unrelated problem of providing an improved light extraction technique for light emitting diodes. Thus, these references would not have been combined.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 1-5, 7, 10-13, and 16-17.

B. The Caracci et al. reference in view of the Slater Jr. et al. reference and further in view of the Lowery et al. reference

Regarding the rejection of claims 6, 8-9, 14-15, and 18-20, the Examiner alleges that the Slater Jr. et al. reference would have been combined with the Caracci et al. reference and further alleges that the Lowery et al. reference would have been combined with the Slater Jr. et al. reference and the Caracci et al. reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

None of the applied references teaches or suggests the features of the claimed invention including a transparent structure mounted on the light emission surface of the substrate. This feature is important for simplifying the manufacturing process while simultaneously improving the light distribution density and reducing the light that is blocked from the semiconductor light emitting element.

As explained above, neither the Caracci et al. reference, nor the Slater Jr. et al.

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reference teaches or suggests these features.

The Lowery et al. reference does not remedy these deficiencies.

Indeed, the Examiner does not allege that the Lowery et al. reference teaches or suggests these features.

Moreover, Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different matters and problems.

In stark contrast to the Caracci et al. reference and the Slater Jr., et al. reference, the Lowery et al reference is concerned with the completely different and unrelated problem of providing a phosphor light emitting diode that can generate white output light having a well-balanced color characteristic for a true color rendition. (Col. 2, lines 34-37).

One of ordinary skill in the art at the time the invention was made who was concerned with providing low-cost integrated transceiver components for local area network and fiber to home applications as the Caracci et al. reference is concerned, or who was concerned with the problem of providing an improved light extraction technique for light emitting diodes as the Slater Jr. et al. reference would not have referred to the Lowery et al. reference, and vice-versa, because the Lowery et al. reference is concerned with the completely different and unrelated problem of providing a phosphor light emitting diode that can generate white output light having a well-balanced color characteristic for a true color rendition. Thus, these references would not have been combined.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 6, 8-9, 14-15, and 18-20.

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III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1-20, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 6/27/06


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CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that I am filing this Request for Reconsideration by facsimile with the United States Patent and Trademark Office to Examiner Wai Sing Louie, Group Art Unit 2814 at fax number (571) 273-8300 this 27th day of June, 2006.


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